

REMARKS

Response to the Office Action

In response to the Office Action dated March 6, 2009, Applicants respectfully submit the Remarks, and reconsideration is respectfully requested. Claims 2, 3 and 5 are currently pending in this application.

Claimed Invention

The present invention is directed to a method of producing an elastic strip material, comprising the steps of: (1) preparing a heat setting composition whose principal ingredients are a polyurethane prepolymer and a latent solidifier obtained by deactivating a solid polyamine, so that a fluid mixture 'a' is formed by dispersing a compressed gas throughout the heat setting composition; (2) extruding out the fluid mixture 'a' from a nozzle of a resin extruder, so that an extruded stream of a desired diameter immediately foams itself; (3) subsequently guiding the stream having not solidified yet into a heating zone whose interior has been heated to or above a critical solidification temperature, so that the stream thus heated is allowed to solidify and simultaneously pressed into a desired peripheral shape while advancing through the heating zone; and (4) finally discharging from the heating zone the foamed, solidified and pressed stream so as to be cooled down to an ambient room temperature, thereby giving the elastic strip material, wherein the heating zone can be a liquid heating zone.

In addition, the present invention is directed to an apparatus for producing an elastic strip material comprising (i) a resin extruder; (ii) a liquid tank having an cooperating with at least one rotor; (iii) a motor for driving the rotor to rotate *in situ*, and (iv) a heating bath including the liquid tank. The resin extruder comprises (i) a reservoir for storing therein an amount of a heat-setting composition; (ii) a gas feeding pipe for charging the reservoir with a compressed gas; and (iii) a nozzle for extruding a fluid

mixture 'a' to form a resin stream. The rotor is constructed such that the resin stream of fluid mixture 'a' effluent from the nozzle and having already foamed but not yet solidified is guided into a hot liquid held in the liquid tank and caused to advance through it. The heating bath having therein a trough formed in and along the periphery of the rotor so as to receive the resin stream of fluid mixture 'a', and a surface shaping member disposed close to and facing the trough so that the fluid mixture 'a' is heated in the heating bath so as to solidify therein and form a resin strip 'b'. The heating bath further comprises an outlet guide for directing the resin strip 'b' towards the outside of the liquid tank, thereby giving the elastic strip material.

Rejection under 35 USC 103

In the Final Office Action, the Examiner maintains the rejection of claims 2, 3 and 5 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,476,563 to Nakata et al. in view of U.S. Patent No. 4,376,834 to Goldwasser et al. and further in view of U.S. Patent Application Publication Number 2003/0106740 A1 to Tabata et al. Applicants respectfully traverse this rejection and request reconsideration thereof.

Although the Examiner acknowledges that the Nakata et al. document "does not teach the method wherein the polymer is a heat setting foamed material comprising a polyurethane prepolymer, a latent solidifier obtained by deactivating a solid polyamine, and a compressed gas," and that this document "does not explicitly detail foaming a heat setting polyurethane composition," the Examiner alleges that it would have been obvious for one of ordinary skill in the art to make the claimed method of the present invention by combining the teaching of Nakata et al. with Goldwasser et al. and Tabata et al.

In addition, although the Examiner acknowledges that the Nakata et al. document and the Goldwasser et al. document "[do] not appear to teach a gas feeding pipe for

charging the material to be extruded, the Examiner also alleges that it would have been obvious for one of ordinary skill in the art to make the claimed apparatus of the present invention by combining the teaching of Nakata et al. and Goldwasser et al. with Tabata et al.

No reasons for a skilled artisan to combine the teaching of Nakata et al. with Goldwasser et al. either alone or in combination with Tabata et al.

Applicants respectfully submit that one of ordinary skill in the art would have no reasons to combine the teaching of Nakata et al. either alone or in combination with Tabata to make the present invention as recited in the pending claims. These three cited prior art documents are directed to three different technologies. Specifically, the Nakata et al. document is directed to a method of making a door mat. The Goldwasser et al. document is directed polyurethane resins that have been invented more than twenty years ago. As for the Tabata et al. document, it is directed to a method of foam-molding. Not only these three cited documents are directed to three different teaching, none of these three documents teach a method or apparatus for forming an elastic strip material, let alone a method or apparatus in which the heat setting composition is foamed and extruded into a stream and guided into a heating zone so that the stream is heated and allowed to solidify and be pressed into a desired peripheral shape as recited in the claimed invention.

In addition, Applicants respectfully submit that the deficiencies of the Nakata et al. cannot be cure by Goldwasser et al. either alone or in combination with Tabata et al. for the reasons presented below.

Primary reference: Nakata et al.

Again, Applicants respectfully submit that Nakata et al. do not teach or suggest the above structure of the present invention as recited in the pending claims of the present invention.

As discussed above, the Nakata et al. document is directed to a method of making a door mat. Nakata et al. neither teach nor suggest a method or apparatus for forming an elastic strip material, let alone a method or apparatus in which the heat setting composition is foamed and extruded into a stream and guided into a heating zone so that the stream is heated and allowed to solidify and be pressed into a desired peripheral shape as recited in the claimed invention.

In the Final Office Action, the Examiner alleges that Nakata et al.'s "doormat could reasonably be considered an "elastic strip." The Examiner also alleges that Nakata et al. discloses a heating zone that is recited in the pending claims. In addition, the Examiner alleges that Nakata et al. disclose "heating water supply to a desired temperature in which the extruded material is hardened."

Applicants respectfully submit that the present invention uses a method for solidifying a heat setting material by heating it in a heating zone. In contrast, in the Nakata's technology, an unsolidified, extruded body is cooled so that it solidifies, which does not at all can be interpreted that a heat setting material is used, or that a means for uniform solidification through heating of an unsolidified body is provided.

The examiner also alleges that Nakata et al. disclose the manufacture of a cord, and thus essentially includes the present invention. Applicants respectfully submit that in the present invention, a heat setting material is selected, as mentioned above, and a technology for manufacturing a cord using this is required, and therefore is different from the method of Nakata et al. which does not at all relate to the technology of the

present invention, thus cannot be regarded as being the same or having the same heat setting material.

Secondary references: Goldwasser et al. and Tabata et al.

As an attempt to cure the deficiencies of Nakata et al., the Examiner cited the Goldwasser et al. document and the Tabata et al. document.

Applicants respectfully submit that Goldwasser et al. either alone or in combination of Tabata et al. do not teach or suggest a method or apparatus for forming an elastic strip material, let alone a method or apparatus in which the heat setting composition is foamed and extruded into a stream and guided into a heating zone so that the stream is heated and allowed to solidify and be pressed into a desired peripheral shape as recited in the claimed invention.

Applicants respectfully submit that the Goldwasser et al. document is directed polyurethane resins having high impact strength and other structural strength properties, and significantly improved resistance to deformation by heat. However, there is no disclosure or suggestion of a method or apparatus for forming an elastic strip material as recited in the claimed invention. Goldwasser et al. neither teach nor suggest the claimed invention. Applicants respectfully submit that the Goldwasser et al. document is directed to a method of forming a structural components while, in Nakata, the extruder extrudes a fused soft vinyl chloride resin. Therefore, Applicants respectfully submit that there would have been no reason for one of ordinary skill in the art to substitute a high impact strength structural material for the soft vinyl chloride resin extruded in Nakata. Applicants also respectfully submit that even if such the proposed combination were made, there would not have been any reason for one of ordinary skill in the art to make a method or apparatus in which the heat setting composition is

foamed and extruded into a stream and guided into a heating zone so that the stream is heated and allowed to solidify and be pressed into a desired peripheral shape as claimed by the present invention.

As for the Zocco and Chidgey documents (USP 3506600 and 3573142), which is described in the office action (at section 15 iv), Applicants respectfully submit that the former describes a manufacturing method for higher density soft urethane foam, and the latter describes the manufacture of turf, and therefore, these documents are not applicable to the rejection of the claims of the present invention.

In the Final Office Action, the Examiner acknowledges that Nakata et al. do not disclose the specifics of the claimed polymer; however, the Examiner alleges that this is taught by the secondary reference, Goldwasser et al.

Applicants respectfully submit that there is nothing in the Nakata et al. document that states that the foaming polyurethane in Goldwasser can be used, and there is nothing in the Goldwasser et al. document that suggests that a cord having cushioning properties can be manufactured by pushing an extruded body into a heating zone for solidification. Thus, there is no reason for one of ordinary skill in the art to state that totally new elements would be necessary in order to combine the two.

In the Final Office Action, the Examiner acknowledges that although there is no direct teaching of a reservoir by Nakata et al.; however, the Examiner alleges that “some type of reservoir would inherently be present in an extruder.” The Examiner acknowledges that the Nakata et al. document “does not teach the method wherein the polymer is a heat setting foamed material comprising a polyurethane prepolymer, a latent solidifier obtained by deactivating a solid polyamine, and a compressed gas,” and that this document “does not explicitly detail foaming a heat setting polyurethane

composition,” the Examiner alleges that it would have been obvious for one of ordinary skill in the art to make the claimed method of the present invention by combining the teaching of Nakata et al. with Goldwasser et al. and Tabata et al. Similarly, although the Examiner acknowledges that the Nakata et al. document and the Goldwasser et al. document “[do] not appear to teach a gas feeding pipe for charging the material to be extruded, the Examiner also alleges that it would have been obvious for one of ordinary skill in the art to make the claimed apparatus of the present invention by combining the teaching of Nakata et al. and Goldwasser et al. with Tabata et al.

Applicants respectfully submit that the Tabata et al. document is directed to a speaker edge made of a thermosetting composition consistent with a polyurethane prepolymer and an inactivated solid polyamine as a latent hardener. Tabata et al. disclose that a gas is dispersed in the thermosetting composition, prior to feeding in a mold, so that it can foam and solidify to give the speaker edge. Applicants respectfully submit that the disclosure of Tabata et al. is different from the claimed invention and that there would have been no reason for one of ordinary skill in the art to use the thermosetting composition of Tabata et al. in place of the soft vinyl chloride resin in Nakata. There is nothing in the Tabata et al. publication that discloses or suggests a method or apparatus for solidifying an elastic strip material in a heated fluid. Hence, Applicants respectfully submit that one of ordinary skill in the art would have not been motivated to combine the teachings of Nakata et al., Goldwasser et al. and Tabata et al. to make the claimed invention. Even assuming, *arguendo*, that the teachings of one of these documents would have been combined by one of ordinary skill in the art, it is submitted the combined teachings would not have rendered obvious the presently claimed method and apparatus for solidifying a heat setting composition in a heating zone in the manner presently claimed.

In view of the above, Applicants respectfully submit that since Nakata et al. either alone or in combination with Goldwasser et al. and/or Tabata et al. to make the claimed invention, and one of ordinary skill in the art would not have any reason to combine these teachings to make the claimed invention, Applicants respectfully request reconsideration and withdrawal of this rejection.

CONCLUSION

In view of the foregoing amendments and remarks, favorable reconsideration and allowance of the claims now in the application are requested.

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Respectfully submitted,

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